

LEMBAR HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW
KARYA ILMIAH: PROSIDING

Judul karya ilmiah (paper) : Malondialdehyde (MDA) Profile of Healthy Volunteers in Yogyakarta Based on Their Sex, Age and Body Mass Index

Jumlah Penulis : 3 orang

Nama Penulis : Ariani N, Akrom, Darmawan E.

Status Pengusul : ~~Penulis pertama/penulis ke 2 /penulis korespondensi~~ **

Identitas Prosiding : a. Judul Prosiding : International Conference of Medical and Health Sciences 2015
b. ISBN/ISSN : 978-602-371-091-1
c. Tahun terbit, tempat pelaksanaan : 2015, Asri Medical Center Yogyakarta
d. Penerbit/organizer : Universitas Muhammadiyah Yogyakarta
e. Alamat Repository PT/web prosiding : -
f. Terindeks di (jika ada) :-

Kategori Publikasi Makalah : ☒ Prosiding Forum Ilmiah Internasional
(beri V pada kategori yang tepat) ☐ Prosiding Forum Ilmiah Nasional

Hasil Penilaian *Peer Review* :

Komponen yang dinilai	Nilai Maksimal Prosiding		Nilai Akhir Yang Diperoleh
	Internasional	Nasional	
	<input type="text"/>	<input type="text"/>	
a. Kelengkapan unsur isi paper (10%)	1.5		1,3
b. Ruang lingkup dan kedalaman pembahasan (30%)	4.5		4,2
c. Kecukupan dan kemutakhiran data/informasi dan metodologi (30%)	4.5		4,2
d. Kelengkapan unsur dan kualitas terbitan/prosiding (30%)	4.5		4,3
Total = (100%)	15		13,0
Nilai Pengusul	3s		2,6
Komentar Peer Review	1. Tentang kelengkapan dan kesesuaian unsur :		
	Unsur artikel lengkap & sesuai keaslian artikel up prosiding		
	2. Tentang ruang lingkup & kedalaman pembahasan :		
	Kedalaman pembahasan cukup, yaitu mengkomunikasikan temuan		
	3. Kecukupan dan kemutakhiran data serta metodologi :		

prestasi kurang up to date,
mungkin karena topiknya : "rare"

4. Kelengkapan unsur kualitas penerbit :

Unsur kualitas penerbit baik.

5. Indikasi plagiasi :

Harah (Therese) 35%
perlu diperbaiki.

6. Kesesuaian bidang ilmu :

Bidang ilmu sesuai

2017

Reviewer 1/2 **

Nama Dr. Dyah Aryani P. Msi., Apt., Ph.D
NIP/NIY.
Bidang Ilmu
Jabatan Akademik
Unit Kerja Farmasi VAD

*dinilai oleh dua Reviewer secara terpisah

** coret yang tidak perlu

**LEMBAR HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW
KARYA ILMIAH: PROSIDING**

Judul karya ilmiah (paper) : Malondialdehyde (MDA) Profile of Healthy Volunteers in Yogyakarta Based on Their Sex, Age and Body Mass Index

Jumlah Penulis : 3 orang

Nama Penulis : Ariani N, Akrom, Darmawan E.

Status Pengusul : ~~Penulis pertama/penulis ke 2 /penulis korespondensi **~~

Identitas Prosiding : a. Judul Prosiding : International Conference of Medical and Health Sciences 2015
b. ISBN/ISSN : 978-602-371-091-1
c. Tahun terbit, tempat pelaksanaan : 2015, Asri Medical Center Yogyakarta
d. Penerbit/organizer : Universitas Muhammadiyah Yogyakarta
e. Alamat Repository PT/web prosiding : -
f. Terindeks di (jika ada) :-

Kategori Publikasi Makalah :
(beri V pada kategori yang tepat)

<input checked="" type="checkbox"/>	Prosiding Forum Ilmiah Internasional
<input type="checkbox"/>	Prosiding Forum Ilmiah Nasional

Hasil Penilaian *Peer Review* :

Komponen yang dinilai	Nilai Maksimal Prosiding		Nilai Akhir Yang Diperoleh
	Internasional	Nasional	
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
a. Kelengkapan unsur isi paper (10%)	1.5		1.3
b. Ruang lingkup dan kedalaman pembahasan (30%)	4.5		4.5
c. Kecukupan dan kemutakhiran data/informasi dan metodologi (30%)	4.5		4.0
d. Kelengkapan unsur dan kualitas terbitan/prosiding (30%)	4.5		4.0
Total = (100%)	15		13.8
Nilai Pengusul	3s		
Komentar Peer Review	<p>1. Tentang kelengkapan dan kesesuaian unsur : Unsur dalam artikel lengkap dan dipenuhi dengan baik</p> <p>2. Tentang ruang lingkup & kedalaman pembahasan : Kedalaman pembahasan baik, sudah melibatkan uji statistik untuk pengambilan kesimpulan.</p> <p>3. Kecukupan dan kemutakhiran data serta metodologi :</p>		

Metodologi yg digunakan sesuai

4. Kelengkapan unsur kualitas penerbit :

file

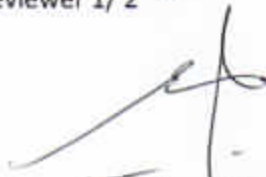
5. Indikasi plagiasi : Tidak ada indikasi plagiasi
berdasarkan data similarity index

6. Kesesuaian bidang ilmu :

Sesuai dengan bidang ilmu penulis

2017

Reviewer 1/ 2 **



Nama Dr. Nurlehasanah
NIP/NIY 60960143
Bidang Ilmu Farmasi
Jabatan Akademik LK
Unit Kerja Farmasi

*dinilai oleh dua Reviewer secara terpisah

** coret yang tidak perlu

malondealdehyd (MDA) profile of healthy volunteers in Yogyakarta based on their sex, age and body mass index

By Akrom

1

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/297020048>

malondealdehyd (MDA) profile of healthy volunteers in Yogyakarta based on their sex, age and body mass index

Conference Paper · September 2015

CITATIONS

0

READS

10

1 author:



Akrom Akrom

Ahmad Dahlan University

29 PUBLICATIONS 7 CITATIONS

SEE PROFILE

Some of the authors of this publication are also working on these related projects:



Development of Nigella sativa oil as immunomodulator and antioxidant for metabolic syndroms patients [View project](#)



Nigella sativa as chemopreventive and immunomodulator [View project](#)

All content following this page was uploaded by Akrom Akrom on 06 March 2016.

The user has requested enhancement of the downloaded file.

The Proceeding of International conference medical and health science

ISBN

Malondialdehyde (MDA) Profile of Healthy Volunteers in Yogyakarta Based on Their Sex, Age and Body Mass Index

Ariani N¹, Akrom², Darmawan E³

1. Postgraduate Program of Clinical Pharmacy of Ahmad Dahlan University of Yogyakarta
Jl. Prof. Dr. Soepomo, Telp. (0274) 379418; Email: Noviaariani91@gmail.com
2. Head of Pharmacology and Clinical Pharmacy Department, Pharmacy Faculty & Head of Drug Information and Crisis Center, Ahmad Dahlan University
3. Pharmacology and Clinical Pharmacy Department, Pharmacy Faculty, Ahmad Dahlan University

Abstract:

Introduction: MDA is an aldehyde compound which is the end product of lipid peroxide in the body. MDA is also a product that can be produced by free radicals through ionization reactions in the body and waste products of biosynthesis of prostaglandins which is the end product of membrane lipid oxidation. MDA is one of the parameters of oxidative stress, where a high concentration of MDA indicate oxidation processes in the cell membrane resulting in oxidative stress.

Aim: To assay the correlations MDA levels in the Yogyakarta based on sex, age and body mass index (BMI).

Methodology: We used the cross sectional study design. Total respondent is forty four people consisting of 11 males and 33 females who live in Yogyakarta. A total of 44 respondents who had met the inclusion criteria were male and female 18-60 years old and are willing be respondents to fill informed consent, healthy respondents as evidenced by a health certificate from the competent healthy care. Examined the levels of plasma MDA using ELISA method. Results of the study will be presented in the form of descriptive and statistical analysis with a confidence level of 95 %.

Results and discussion: Data analysis research results obtained the mean level of MDA as a whole is 83.54 ± 4.01 ng/ml, while based on sex showed that the mean level of MDA in the male respondents is lower than female. Mean levels of MDA on male respondents is 75.36 ± 2.90 ng/ml while on the female respondents is 86.27 ± 4.32 ng/ml. However, based on statistical analysis Independent sample t-test p value = 0.353 ($p > 0.05$), the which means there is no significant correlation between plasma MDA concentration on male and female respondents. Analysis of the data the mean levels of MDA the based on age showed that the mean level of MDA on respondents aged under 25 years lower compared to respondents aged over 25 years, where respondents were aged under 25 years had an mean level of MDA is 85.85 ± 4.27 ng/ml while those aged over 25 years is 71.38 ± 1.88 ng/ml. However, based on statistical analysis Independent sample t-test p value = 0.163 ($p > 0.05$), the which means there is no significant correlation between plasma levels of MDA among respondents aged under 25 years and the respondents that were aged over 25 years. Analysis of the data the mean levels of MDA based on BMI indicates that respondents who are not obese have an mean level of MDA were higher 85.24 ± 4.50 ng/ml, while the that obese have an average level of MDA 79.51 ± 2.57 ng/ml. However, based on statistical analysis Independent sample t-test p value = 0.599 ($p > 0.05$), the which means there is no significant correlation between MDA levels on that obese respondents and respondents who were not obese.

Conclusions: There was no significant correlation between MDA levels with sex, age and BMI (Body Mass Index) of healthy subjects in Yogyakarta.

Keywords: Profile, Levels, Malondialdehyde

The Proceeding of International conference medical and health science

ISBN

1. INTRODUCTION

Reactive oxygen (reactive oxygen species or ROS) can be formed by endogenous or exogenous, as part of the regular metabolic activity, physical activity, lifestyle and diet. Oxidative stress in humans, especially in urban areas tend to increase. Oxidative stress is caused by exposure to such radiation, smoking, air pollution, heavy metals, pesticides and food additives (Miharja, 2005).

Free radicals are highly reactive and tend to react with other molecules to find a pair electrons into a more stable form. Free radicals can react with various molecules, especially lipid membranes, proteins and DNA, so that it can change its structure and function, which eventually leads to cell death (Halliwell B, 1991; Kontos, 2001; Droge, 2002).

Under conditions of free radicals is higher than the antioxidant, there will be oxidative stress. Conditions of oxidative stress of the body can be measured by parameters malondialdehyde levels (MDA) in plasma. The higher levels of plasma MDA, the higher the oxidative stress that occurs in the cells of the body (Valko *et al.* 2006). MDA is the final product in the process of lipid peroxidation caused by free radical reactions in unsaturated fats in cell membranes (Jovanović *et al.*, 2012).

2. METHODE

This type of research is descriptive with cross sectional study design. This study was conducted in Yogyakarta. Examination of blood samples carried out in the laboratory. The population used is the people who reside in Yogyakarta. The sample is part of a population with total 44 people consisting of 11 men and 33 women who have fulfilled the inclusion and exclusion criteria, namely healthy volunteers as evidenced by a health certificate from the hospital authorities, men and women aged 18-60 years old and are willing to become respondents (fill informed consent). The independent variable in this study were age, gender and BMI (Body Mass Index), while the dependent variable is MDA. MDA is the final product in the process of lipid peroxidation caused by free radical reactions in unsaturated fats in cell membranes (Jovanović *et al.*, 2012). The research instrument used in this study is ELISA Reader that is used to measure the levels of MDA. Respondents who had met the inclusion criteria and were willing to fill informed consent then examined plasma MDA concentration using ELISA method. Results of the study will be presented in the form of descriptive and statistical analysis with a confidence level of 95%.

3. RESULTS AND DISCUSSION

The research aimed to find out how the image of the plasma MDA concentration on the people of Yogyakarta. Respondents were used in this study amounted to 44 people consisting of 11 people male and 33 people female. Age of respondents in this study ranged from 18-60 years consisting of 37 people aged under 25 years and 7 persons aged over 25 years. Characteristics of the subjects in this study can be seen in Table 1.

The Proceeding of International conference medical and health science

ISBN

Table 1. Characteristics Responden

Characteristics Responden	n	%
Sex		
Male	11	25
Female	33	75
Amount	44	100
Age		
<25 years	37	84,09
>25 years	7	15,91
Amount	44	100
Education		
High School	10	22,73
DIII	1	2,27
S1	32	72,73
S3	1	2,27
Amount	44	100
Work		
Student	34	77,27
Swasta	7	15,91
Wiraswasta	3	6,82
Amount	44	100

MDA research results on Yogyakarta society based on gender can be seen in Table 2.

Table 2. Distribution of MDA levels based on sex and correlations sex with levels of MDA.

	n	Mean MDA Levels \pm SD (ng/ml)	MDA Levels of minimum (ng/ml)	MDA Levels of maximum (ng/ml) Sex	p
Male	11	75,36 \pm 2,90	35,67	132,33	0,353
Female	33	86,27 \pm 4,32	5,67	175,67	

Results of the study data analysis based on sex showed that the mean level of MDA in male respondents is lower than female. It is shows that female have levels of MDA higher which means that female are more at risk happen of oxidative stress than male. In some studies, the most widely

is 86.27 ± 4.32 ng / ml with minimum MDA levels of 5.67 ng / ml and a maximum of 175.67 ng / ml. Test results analysis with independent sample t-test showed no significant correlation between the average levels of MDA on respondents male and female with $p = 0.353$.

MDA research results on the Yogyakarta community based on age can be seen in Table 3.

Table 3. Distribution of MDA levels based on Age

Age (Years)	n	Mean MDA Levels \pm SD (ng/ml)	MDA Levels of minimum (ng/ml)	MDA Levels of maximum (ng/ml)	P
<25	37	85.85 ± 4.27	5,67	175,67	0,163
>25	7	71.38 ± 1.88	35,67	85,67	

Analysis of data the mean levels of MDA based on age showed that respondents aged under 25 years higher than the age that over 25 years. Respondents that were aged under 25 years had higher levels of MDA 85.85 ± 4.27 ng / ml with minimum MDA levels of 5.67 ng / ml and a maximum of 175.67 ng / ml. Respondents that were aged over 25 years had an mean MDA levels is 71.38 ± 1.88 ng / ml with minimum MDA levels of 35.67 ng / ml and a maximum 85,67ng / ml. Based on statistical analysis Independent sample t -test p value = 0.163 ($p > 0.05$), which means there is no significant correlation between plasma MDA levels in subjects aged under 25 years and over 25 years.

This is not in accordance with previous studies, in which the research conducted by Benchter et al that showed an increase in plasma MDA associated with age. The older the more it will increase plasma levels of MDA (Ramatina, 2011). The more parents here refers to the habits and lifestyles that increasingly extreme, such as jobs and the environment. Heavy work that is mostly carried out by adults is different from the student (D Yesilbursa et al, 2005). This difference may be caused by differences in factors age that is too small so unspecific.

MDA research results on the Yogyakarta community based on BMI can be seen in Table 4 .

Table 4. Distribution of MDA levels based on Body Mass Index (BMI) and correlations BMI with MDA

	n	Mean MDA Levels \pm SD (ng/ml)	MDA Levels of BMI minimum (ng/ml)	MDA Levels of maximum (ng/ml)	P
Non Obese	31	85.24 ± 4.50	5,67	175,67	0,599
Obese	13	79.51 ± 2.57	42,33	129,00	

Based on the reaserch results showed mean of MDA plasma on respondents that not obese is 85.24 ± 4.50 ng / ml with minimum levels of 5.67 ng / ml and a maximum levels of 175.67 ng / ml , while mean of MDA plasma on respondents that obesity is 79.51 ± 2.57 ng / ml with minimum levels 42.33 ng/ml and maximum levels 129.00 ng/ml. This is shows the mean levels MDA on respondents with obesity lower than with respondents that are not obese . Test results analysis with independent sample t-

test showed no significant correlation between mean plasma MDA concentration on respondents who are not obese with obesity with $p = 0.599$.

Obesity increases the metabolic mechanisms and processes, thereby increasing myocardial oxygen consumption. Increased oxygen consumption can produce ROS, such as superoxide, hydroxyl radicals and hydrogen peroxide as a result of an increase in mitochondrial respiration (Mutlu-Turkoglu et al, 2003). Electron discharge can stimulate one electron reduction of molecular oxygen in the formation of superoxide radicals (Severina C.V.C. Lima1 et al, 2004). The incidence of lipid peroxide as a result of oxidative stress can be judged by the oxidative stress marker. In some literature describes patients obese have levels MDA higher than non- obese. However, based on the results of the analysis showed different results where the obese group had average levels of MDA were lower than the group who are not obese but the value of $p = 0.599 (> 0.005)$ so that there is no significant difference. That is because BMI of respondents who do not differ much between respondents.

4. CONCLUSIONS

There was no significant correlation between MDA levels with sex, age and BMI (Body Mass Index) of healthy subjects in Yogyakarta.

5. ACKNOWLEDGEMENT

I thanks responden for their participation in this study, Mr. Dr. dr. Akrom, M.Kes and Dr. rer. nat Endang Darmawan, M.Si., Apt for their support in realization of the study.

6. BIBLIOGRAPHY

- Droge W. *Free radical in the physiological control of cell function*. *Physiol Rev* 2002 ; 82 : 47 – 95.
- D Yesilbursa et al, 2005, *Lipid peroxides in obes patients and effects of weight loss with orlistat on lipid peroxides level*. *International Journal of Obesity*, 29: 142-145
- Halliwell B. *Reactive oxygen species in living system. source, biochemistry and role in human disease*. *Am J Med* 1991 ; 91 : 14 – 21
- Kontos HA. *Oxygen radicals in cerebral ischemia : The 2001 willis lecture*. *Stroke* 2001 ; 32 : 2712 – 16.
- Miharja L. 2005. *Peran Glutathion Sebagai Antioksidan Dalam Tubuh*. *Majalah Kedokteran Indonesia*. Volume 55. (1). 42-43
- Mutlu-Turkoglu U, Oztezcan S, Telci A, Orhan Y, Aykac-Toker G, Sivas A, Uysal M, 2003, *An increase in lipoprotein oxidation and endogenous lipid peroxides in serum of obese women*. *Clin Exp Med*; 2: 171-174
- Ramatina, 2011, *Effectiveness of Various Antioxidant Supplements on Reducing Oxidative Status (Level of Plasma Malondialdehyde (MDA)) among Extension Students of Bogor Agriculture University, IPB; Bogor*
- Severina C.V.C. Lima1, et al. 2004, *Plasma lipid profile and lipid peroxidation in overweight or obese children and adolescents*. *Journal of Pediatric* 80(1):23-8

The Proceeding of International conference medical and health science

ISBN

Valko M *et al.*, 2006, *Free Radical, metal and antioxidant in oxidative stress induced cancer*, J Chem. Biol. Rusia edisi 160. p.1-40.

malondealdehyd (MDA) profile of healthy volunteers in Yogyakarta based on their sex, age and body mass index

ORIGINALITY REPORT

35%

SIMILARITY INDEX

PRIMARY SOURCES

1	halshs.archives-ouvertes.fr <small>Internet</small>	32 words — 21%
2	eprints.nottingham.ac.uk <small>Internet</small>	21 words — 14%

EXCLUDE QUOTES OFF
EXCLUDE BIBLIOGRAPHY ON

EXCLUDE MATCHES OFF